Janice K. Brewer
Governor

Brian C. McNeil
Director

ARIZONA DEPARTMENT OF ADMINISTRATION

ARIZONA STRATEGIC ENTERPRISE TECHNOLOGY OFFICE

100 NORTH FIFTEENTH AVENUE • SUITE 400

PHOENIX, ARIZONA 85007

(602) 542-2250

March 14, 2014

To: Chairman Thomas Wheeler
Commissioner Mignon Clyburn
Commissioner Jessica Rosenworcel
Commissioner Ajit Pai
Commissioner Michael O'Rielly
Jonathan Chambers
Federal Communications Commission
445 12th Street, SW
Washington DC 20024

From: Aaron Sandeen, Deputy Director and State CIO, Arizona Department of Administration

Re: Expression of Interest-Rural Broadband Trials
Connect America Fund, WC Docket No. 10-9

Dear Chairman Wheeler, Commissioners, and Mr. Chambers,

The State of Arizona hereby express an interest in participating in the Rural Broadband Trials announced at the January 30th FCC Open Meeting anticipated under the Connect America Fund (CAF). We have identified and offer two separate projects each designed to meet a critical and worthy Arizona broadband need and presenting opportunities suitable for experimental treatment as described below.

The State of Arizona is excited to respond to this opportunity. We are committed to building partnerships and cooperation between public and private entities to help make broadband service available to our citizens and enterprises in these woefully underserved areas.

Thank you for considering our Expression of Interest in your decision about the amount of funding that will be allocated in the Rural Broadband Trials. We commend you on this effort to fund innovative initiatives to connect poorly served communities and we stand ready to work with you to close the digital divide.

The Contact Person on this project is Michael Sherman, Executive Manager, Broadband Planning & Public Safety Communications, ADOA - Arizona Strategic Enterprise Technology (ASET) Office, State of Arizona, (602) 364-4794, E-Mail: michael.sherman@azdoa.gov.

Thank you for your vision and efforts to increase broadband availability and utilization on behalf of all Americans.

Sincerely,

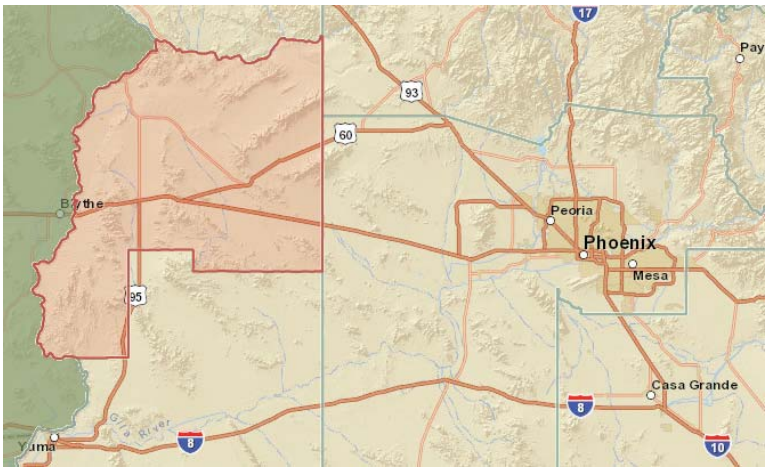
Aaron V. Sandeen

Proposed Arizona Broadband Experiment #1

La Paz County Digital Arizona Tactical Model Deployment

Background

La Paz County encompasses 4,518 square miles, the third smallest of Arizona's counties and has a population of 20,902 with the lowest population density, only 4.6 persons per square mile compared to the statewide average of 56.3. Parker, the county seat, has a population of 3,082, Quartzsite 3,773, and the unincorporated areas (including the Colorado Indian Reservation) 14,047. The U.S. Bureau of Land Management controls 58.3 percent of the land; the State of Arizona, 8.8 percent; other public lands, 19.5 percent; the Colorado River Indian Tribe owns 8.1 percent of the land; and 5.3 percent of the land is owned privately or by corporations.



La Paz County represents by far the area with the most severe broadband deficit in Arizona and represents one of the most underserved regions of the nation. In summary:

- Only 30.7% of the population has access to DSL services with speeds ≥ 768 Kbps down. For DSL services ≥ 6 Mbps down a scant 18.9% of La Paz residents have access.
- Only 28.8% of the population has access to cable modem services with speeds ≥ 768 Kbps. For cable modem services ≥ 6 Mbps down only 23.8% of La Paz residents have access.
- Virtually none of La Paz County's population (.05%) has access to fixed wireless services at any speed.
- While mobile wireless services with speeds ≥ 768 Kbps down do reach virtually all of La Paz County residents, at speeds of ≥ 6 Mbps down only 36.6% of residents have access.

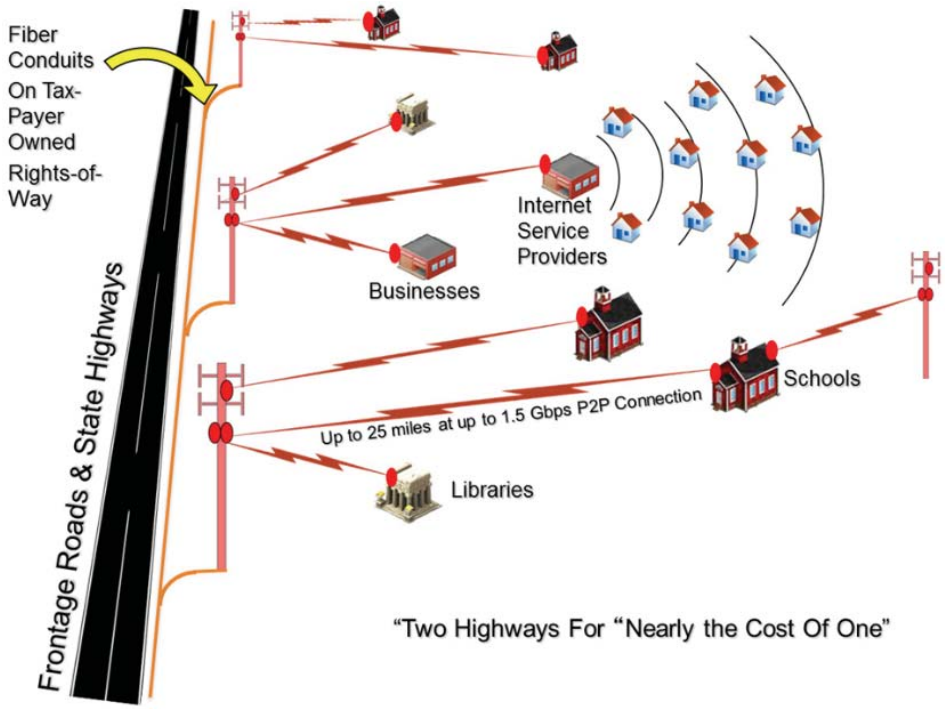
Conceptual Plan

La Paz County's present broadband infrastructure and services availability is quite simply grossly inadequate for the current needs for the vast majority of the county's residences, enterprises, and institutions. Community Anchor Institutions (CAI) across education, healthcare, and public safety, among others have substantial broadband constraints and access issues without satisfactory solutions. The State of Arizona is proposing a multifaceted approach deemed experimental in its breadth and interrelationship of elements as follows:

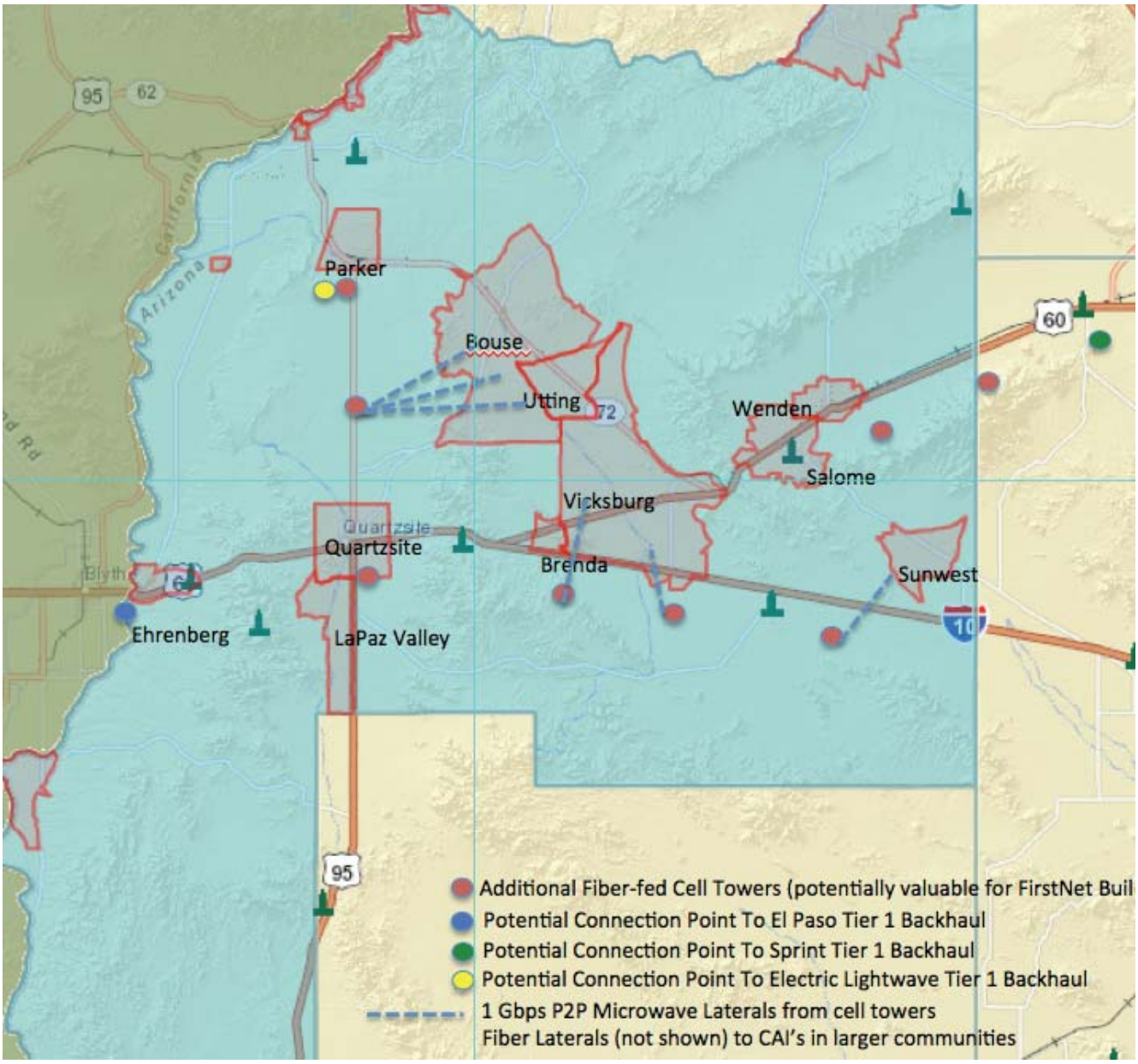
- Support middle mile fiber deployments by long haul and other providers along State highways under a highway conduit initiative enabled by State legislation (SB1402) redefining transportation to include the transportation of information. The program is structured to operate on a cost recovery basis and insure fiber network access points for communities are made available along the routes.
- Develop and deploy successive elements of the Digital Arizona Tactical Model by leveraging the synergies of expanded K-12 and higher education under state and federal programs, the dynamic Arizona telemedicine infrastructure, and the evolving FirstNet public safety broadband network. This is expected to create and open up an inventory of fiber-fed wireless towers from which mobile and fixed wireless broadband can be distributed to nearby communities and populations with high-speed point-to-point as well as point-to-multipoint distribution. See the illustration below.
- Engage multiple fixed wireless providers and encourage their investing in and deploying last mile high-capacity broadband service delivery capabilities with easy, cost effective access to vertical assets, backhaul, and community partnerships.
- Facilitate community and stakeholder broadband demand identification and aggregation to influence incumbent and competitive DSL and cable modem providers to invest and deploy new infrastructure to serve additional populated areas.
- Work with regional and municipal governments to adopt predictable best practices in ROW management and wireless asset placements to encourage deployment.

- **Digital Arizona Tactical Model Illustration**

.



The State is already involving many core broadband stakeholders and CAIs through several key Executive Branch agencies and NTIA funded policy and technical consulting engagements. La Paz County stakeholders across economic development, education, healthcare, and public safety areas have been significantly engaged in a regional Western Arizona Council of Governments (WACOG) Broadband Steering Committee for over a year and particularly education and healthcare CAIs have indicated their strong interest in participating in regional proposals and processes to help remediate their abiding issues with access to broadband. Further, a number of broadband providers have indicated their interest in partnering with the State in rural broadband trials under the Connect America Fund. Several providers are in negotiation with the Arizona Department of Transportation over possible use of State highway ROW for conduit and fiber deployment, a core element of the Digital Arizona Tactical Model.



The goal is to greatly improve La Paz County access to mobile and fixed wireless broadband service, as well as wired services where practical within three years through investing in and implementing the Digital Arizona Tactical Model. Positive results will be a significant driver in economic development, sustainability, and growth of this community. ASET has developed (and continues to enhance) sophisticated tools for infrastructure cost modeling and provider market opportunity analyses for any targeted geographies in the State. These tools can be readily utilized for detailed cost projections and *pro forma* carrier business plans as the project scope and structure are refined.

Rough preliminary technology design and budget estimates indicate that it would be cost effective to build additional fiber-fed wireless towers every 5 miles instead of the current 20 miles along the three major highways that intersect La Paz. This, coupled with a mix of fiber and P2P microwave laterals connected directly to at least 25 of the 83 CAI buildings in the county's major population centers could deliver substantial bandwidth community wide and

especially to the school, healthcare, and public safety facilities. These CAI's might also become distribution hubs to the rest of these communities' residents and businesses through arrangements with private ISPs.

Three long-haul fiber networks pass through the county so there is likely to be cost-effective back-haul connectivity to Tier 1 POPs in the state. Total approximate cost to implement this plan this is estimated be in the range of $10M to $18M. It is hoped that CAF funds coupled with potentially available State funding would be a sufficient incentive to private carriers to make the necessary additional investments to make this plan a reality. Preliminary discussion with a number of providers indicates this approach would be attractive. Should the FCC wish to move forward, Arizona stands ready to support the creation of a detailed plan and cost estimate and to facilitate bringing all of the necessary parties to the table for implementation.

Proposed Arizona Broadband Experiment #2

Southern Arizona Electric Utility Partnership

Background

Tucson Electric Power Co. (TEP) is interested in completing its communication network to the south of Tucson and running parallel to the I-19 south to the City of Nogales and further in opening up its fiber infrastructure to enable simple and low-cost leased access by last-mile providers.

The City of Nogales, according to Census information, is home to approximately 20,878 people in 5,985 households with a median annual income per household of $53,046. The City is Arizona's largest international border town acting as a major international gateway along the United States-Mexico border and serving as the economic capital of the region. It is located in a valley between two mountains and centered on I-19 on the United States-Mexico border. The City is approximately 4 miles wide by 5 miles long making the population density about 1000 people per square mile.

The surrounding Santa Cruz County is Arizona's smallest county with an area of 1,238 square miles and a total population of 48,724 yielding an overall population density of about 38 people per square mile (including the higher density City of Nogales). Santa Cruz County has some significant broadband availability deficits, especially to its more rural citizens, businesses, and institutions. In summary:

- While 92.0% of the population has access to DSL services with speeds ≥ 768 Kbps down, for DSL services ≥ 6 Mbps down only 69.9% of Santa Cruz County residents have access.
- Only 73.0% of Santa Cruz County's population has access to cable modem services though their download speeds generally exceed 10 Mbps. This is compared to some 88% statewide.
- While 97.0% of the population has access to fixed wireless services with speeds ≥ 768 Kbps down, for fixed wireless services ≥ 6 Mbps down a scant 9.1% of Santa Cruz County residents have such access.

- Mobile wireless services with speeds ≥ 768 Kbps down do reach virtually all of La Paz County residents and at speeds of ≥ 6 Mbps down some 94.2% of residents continue to have access.

Conceptual Plan

The TEP connection path proposed for the data backhaul is single mode fiber along to the East of the I-19 North to Tucson. TEP has placed Optical Pair Ground Wire (OPGW or dark fiber) with 24 fiber pair on the transmission lines that have been improved in the last decade. However, there is a 30 mile gap in this OPGW network that needs to be built where the lines have not been improved, to connect TEP with their 3 distribution substations in Nogales with fiber.

Proposed New TEP Fiber Infrastructure (In Green)

The above figure shows, in red, the TEP existing fiber path and the green is the proposed construction project for the 30 mile segment that needs to be completed to bridge the gap between isolated network sections. It was not originally completed initially due to fiscal constraints of the City of Nogales.

TEP is interested in completing the OPGW for this path and will contribute significant investment and resources to the project. TEP must go underground by trenching next to the power transmission line in the TEP easement of the green section of the above figure. This will allow TEP and Nogales to upgrade transmission lines later while minimizing the interruption of services. TEP will connect the green fiber route with the overhead fiber on the red sections and is further committed to providing splice boxes placed approximately every mile to enable simple and low-cost access by last-mile providers to this critical middle backbone capacity if/when it is implemented.

ASET has developed (and continues to enhance) sophisticated tools for infrastructure cost modeling and provider market opportunity analyses for any targeted geographies in the State. These tools can be readily utilized for detailed cost projections and *pro forma* carrier business plans as the project scopes and structures are refined. The estimated total utility investment in this project is $40M with an estimated one time capital infrastructure investment needed of $6.45M. After initial investments, the project is anticipated to be self-sustaining through connection and use fees while acting as a significant driver in economic development, sustainability, and growth of the City of Nogales and surrounding Santa Cruz County.